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CLIMATOLOGY OF CONSUMPTION.

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THE very elaborate inquiry of Dr. Bowditch to ascertain the circumstances which lead to the development of consumption in Massachusetts, resulting in the conclusion that its prevalence is intimately connected with, and apparently dependent on, the humidity of the soil, and that *soil moisture* is the only known characteristic connected with the consumption-breeding districts, has invested the etiology of this disease with a new interest. It may be questioned whether this relation as cause and effect has yet been so far proved as to be entitled to the appellation of *a law*, but it is certainly one well-established step towards it.

In a recent examination of the Registration Returns of Deaths, &c., in Massachusetts, I very naturally was led to observe what light these Returns would throw upon the question, and whether any new facts might be elicited. To enlarge the field of inquiry as much as possible, I compared the returns of this State with those of the United States Census for 1860. This Census has afforded an opportunity of tracing this and other diseases over a wider extent of territory and greater range of climate and variety of soil than has ever been enjoyed before, in any age or country. Reports of isolated and widely remote cities and military stations have been given already, but never has an inquiry throughout the whole land, at the same time and under the same auspices, been made.

Various opinions have been entertained as to the comparative prevalence of consumption North and South. Northerners are accustomed to say, and perhaps believe, that it is quite as great at the South as at the North; and an examination of the mortuary records of some of the larger Southern cities would well nigh justify their impression. The Southerner, on the other hand, declares that there would be no consumption at all at the South, except for the Northerners who come South to die. In order to arrive at something

positive on this point, I prepared a table showing the whole number of deaths ascribed to consumption in each of the States; then, the number of persons living to one who died of consumption; and, finally, the percentage of deaths from consumption to deaths from all other specified diseases, excluding deaths from violence. The States are arranged in the order of greatest mortality from consumption, as shown by this latter column.

STATES.	Consumption.			Fever.			Sum of Percentages.
	No. of Deaths.	Population to one Death.	Percentage to all Deaths.	No. of Deaths.	Population to one Death.	Percentage to all Deaths.	
Maine	2,169	290	29.888	616	1,019	8.500	38.388
New Hampshire	1,163	280	26.971	340	959	7.885	34.856
Rhode Island	567	308	24.220	81	2,155	3.460	27.680
Vermont	779	404	24.043	253	1,245	7.809	31.852
Massachusetts	4,845	254	23.758	965	1,276	4.732	28.490
Connecticut	1,269	363	21.611	341	1,949	5.807	26.418
District of Columbia	255	294	20.565	60	1,251	4.838	25.403
New Jersey	1,350	498	18.794	314	2,140	4.371	23.165
New York	8,207	473	18.265	1,663	2,333	3.701	21.966
Pennsylvania	5,012	579	17.375	1,930	1,506	6.681	24.056
Michigan	1,187	631	17.058	636	1,177	9.141	26.199
Maryland	1,197	574	16.916	392	1,753	5.539	22.455
Delaware	201	558	16.905	77	1,455	6.475	23.380
California	524	725	16.176	301	1,262	9.281	25.457
Minnesota	151	1,140	14.965	83	2,073	8.226	23.181
Ohio	3,495	669	14.741	1,650	1,418	6.959	21.700
Wisconsin	910	852	13.519	485	1,599	7.206	20.725
Indiana	1,704	792	11.669	1,763	766	12.079	23.748
Kentucky	1,742	663	11.131	1,669	693	10.665	21.796
Iowa	748	902	10.773	878	769	12.646	23.419
Illinois	1,948	879	10.545	2,329	735	12.602	23.147
Tennessee	1,440	771	10.036	1,745	636	12.162	22.198
Virginia	2,109	757	9.942	1,453	1,097	6,881	16.823
Oregon	21	2,498	9.170	17	3,086	7.423	16.593
Kansas	107	1,002	7.839	334	321	7.839	32.307
Missouri	1,302	908	7.742	2,363	503	14.050	21.792
Louisiana	843	839	7.244	1,384	512	11.893	19.137
North Carolina	761	1,304	6.394	1,503	660	12.626	19.020
Florida	97	1,556	5.950	235	597	14.417	20.367
Alabama	596	1,618	5.027	1,466	651	12.366	17.393
Mississippi	554	1,428	4.853	1,710	463	15.002	19.855
Texas	420	1,439	4.833	1,346	449	15.491	20.324
South Carolina	390	1,804	4.279	1,120	628	12.290	16.569
Georgia	491	2,153	4.156	1,455	727	12.311	16.467
Arkansas	329	1,323	3.878	1,510	651	17.800	21.678
United States	48,803	899+	13.129	34,467	1,426	9.271	22.400

The result is not a little remarkable; and, as might have been expected, does not justify either the Northern or the Southern view, though it must be admitted that the Southern view accords most nearly with facts. If we arrange the States in the order of greatest fatality as shown by the proportion of persons living to one dead from consumption during the year, they read as follows:—Massachusetts, New Hampshire, Maine, District of Columbia, Rhode Island, Connecticut, Vermont, New York, New Jersey, Delaware, Ma-

ryland, Pennsylvania, Michigan, Kentucky, Ohio, California, Virginia, Tennessee, Indiana, Louisiana, Wisconsin, Illinois, Iowa, Missouri, Kansas, Minnesota, North Carolina, Arkansas, Mississippi, Texas, Florida, Alabama, South Carolina, Georgia, Oregon. In this list we seem to be travelling directly from north to south through the States, finding scarcely a State out of its place, the District of Columbia, Louisiana and Oregon being the only notable instances of displacement. The proportions range from one death in 254 persons in Massachusetts to one in 2,498 in Oregon. In twenty-one States the deaths are above the average (one in 899), all of which are as far north as Virginia, except Louisiana; and fourteen are below the average, all of them as far south as Virginia, excepting Minnesota, Iowa and Oregon. In regard to the latter (and the same may be said of the new Territories not here enumerated) the unusual immunity is accounted for by the nature of the population, mostly robust emigrants, and by their out-of-door lives. In regard to the new Northwestern States, about the upper Mississippi and Lakes, the same remark will to a great extent apply, in addition to the well-known freedom of these regions from great and sudden variability of climate.

If we arrange the States according to the percentage of deaths from consumption to deaths from all other specified *diseases*, excluding deaths from violence, which is a still more accurate test of the liability to consumption in any region, the sequence from north to south is still more exact. They then read, Maine, New Hampshire, Rhode Island, Vermont, Massachusetts, Connecticut, District of Columbia, New Jersey, New York, Pennsylvania, Michigan, Maryland, Delaware, California, Minnesota, Ohio, Wisconsin, Indiana, Kentucky, Iowa, Illinois, Tennessee, Virginia, Oregon, Kansas, Missouri, Louisiana, North Carolina, Florida, Alabama, Mississippi, Texas, South Carolina, Georgia, Arkansas. The coincidence of the two lists, considering that the data are only for one year, is wonderfully great. The percentages of deaths from this disease to deaths from all other specified diseases range from 29.90 in Maine to 3.86 in Arkansas. This range is surprisingly great; and however liable to slight fluctuations in reality, or from inaccuracies in registration, the great fact is demonstrated, so as to demand acceptance as a general law, that, other things being equal, consumption positively, uniformly, and largely diminishes as we proceed from the Northern to the Southern States. Seventeen of the States are above the average percentage (13.30), all of which are north of Kentucky; and eighteen are below the average, all of which are south of the same line, excepting Illinois, Indiana, Iowa and Oregon. In fact, a line drawn east and west through the States, at about the 38th or 39th parallel of latitude, somewhat variable in direction, as all isothermal lines are, striking about the middle of the course of the Ohio river, would separate the territory where the percentage of

deaths from consumption exceeds the average percentage for all the States, from the territory where it is below.

The above figures respecting the several United States enable us to take another decided step in the etiology of consumption, and to draw another line within which the truth as to its cause must lie. As this line is indicated solely by latitude, it follows, at least it is fair to infer, that cold is the agent concerned; and that cold must be added as another element no less obvious than moisture in the genesis of this disease. The well-observed fact that monkeys, serpents, and a large proportion of the tropical feline animals, when removed to cold climates, die of tuberculosis, has a significant bearing on this point. Nor can it be said that it is the mere degree of cold which has so marked an influence in inducing or fostering the disease, for we find the Northwestern States about the great Lakes—Iowa, Minnesota and Wisconsin—standing high on the list of immunity, though quite as far to the north as New England. These two districts lie between 41 and 47 degrees of latitude; and according to the records kept at military stations, the average annual temperature in New England is 45°09 of Fahr., and 44°34 in the Northwest District; the number of inches of rain in the former forty-one inches, and in the latter thirty and a half inches, showing a very great similarity of climate, so far as heat and moisture are concerned. The extremes of heat and cold in the two districts are very nearly alike also, being 104° to –32°, a range of 136°, in New England; and 104° to –38°, a range of 142°, in the Northwest. The comparative frequency and rapidity of the changes, in other words the temporary variability of the climate, it is not easy to ascertain. Yet in the New England States the average of deaths from consumption to deaths from all other specified diseases is about 25 per cent., and in the Northwest it is but about 14 per cent.

No one will be disposed to doubt the validity of Dr. Bowditch's *law*, as he terms it, that moisture is one of the main causes of consumption, everywhere else as well as in New England; and *soil-moisture* may be more pernicious than other moisture. But it would seem that moisture alone cannot be the sole or principal cause, any more than cold; for in all the low grounds and damp atmosphere of the South and Southwest there is comparatively little consumption. The writers quoted by Dr. Bowditch—Drs. Forry, Drake, Blodgett and Lawson—as we understand them, do not lay any particular stress upon moisture alone as a proximate cause. The Report of Dr. Coolidge on the health of the U. S. Army, throws very little light on this subject. The military stations referred to are mere points, chosen simply for strategic purposes, and do not represent the general conditions of the territory around them; their occupants are not denizens, but gathered from all quarters of the country and from all nationalities; their stay is transient; and the small and widely diverse proportions of those dying to those treated show how valueless the re-

turns are in this respect. For instance, of the 21 cases treated in New England, only 6 died; of 26 treated at St Louis, 24 died.

These two lines of investigation, that of Dr. Bowditch and the returns of the United States Census of 1860, show, we think, that cold combined with moisture, in other words *cold moisture*, is the meteorological condition which exercises the principal agency in the induction of consumption; and that neither agent, without the other, can have any very controlling influence as its cause. As a concomitant and subsidiary influence, great and sudden changes, *variableness* of climate, must be added in determining this as well as other diseases. Favorable and unfavorable limited localities, on a small as well as on a large scale, are shown to exist, both by the researches of Dr. Bowditch and by the census. Moisture on a northern slope and driven by north or east winds will be more potent in inducing diseases than moisture on a southern slope, or driven by south or west winds. We refer in this remark to winds on our Atlantic coast. Warm moisture and dry cold, we apprehend, will ever be found favorable to exemption or relief from consumption. But rain does not always mean moisture, nor heat dryness, in a meteorological sense; and the whole subject is so connected with the physical laws which regulate dryness and moisture as to demand much further research and generalization before the real telluric and climatal conditions most likely to develope or mitigate consumption can be determined. We can only claim to have determined one of the elements in the problem.

As the rate of mortality from all causes is larger at the South than at the North, it being one in every 67 of the living population in the Gulf States, and only one in 74 in the New England States, the inquiry arises, what class of diseases has taken the place of consumption in its regular decrease from North to South. We know that fever, in its various forms, is the disease most prevalent and most fatal at the South. The opinion has been expressed that moist, intermittent-fever countries are not liable to consumption. The deaths from fever of all types have been shown in connection with consumption in the table given in this paper. It will be seen that, in the order of fatality, the list of States is nearly reversed. The causes of fever being of miasmatic origin, are liable to greater variation than those of consumption, and the sequence of States in regard to fever would be less constant than in regard to consumption. But the generally reversed sequence in regard to these two diseases is sufficiently remarkable. The extremes in the case of consumption are 3.86 per cent. of deaths from all specified diseases in Arkansas, and 29.90 per cent. in Maine; the extremes in the case of fever are 3.25 per cent. in Connecticut, and 24.46 in Kansas. But if we add the percentages from the two causes in each States, the extremes are reduced to 16.54 per cent. in Oregon to 32.30 in Kansas, the average for all the States for the two diseases

being 22.4 per cent.; so that these diseases are to a very great degree complementary to each other.

RUPTURE OF THE UTERUS—RECOVERY.

By Benjamin Cushing, M.D., Dorchester.

[Communicated for the Boston Medical and Surgical Journal.]

November 9th, 1859, I was called to see, in consultation with Dr. J. H. Warren, of Neponset, Mrs. K., Irish, aged about 32, then in labor with her first child. The patient had been in labor for a long time, the os uteri was fully dilated, and the membranes were broken, but the child had made no advance. It was deemed best to turn and deliver. This was accomplished only after reducing the size of the head by perforation through the "foramen magnum." The patient recovered without any trouble.

Dec. 9th, 1860, I was again called by Dr. Warren to this same woman, again in labor. I saw her between 9 and 10 o'clock, P.M. At 6, P.M., her pains, after long continuance, had suddenly ceased. There had been vomiting, with extreme prostration. Stimulants had been freely given. On laying my hand upon the abdomen, I felt what seemed to me to be some part of the child, with only the abdominal walls interposed between it and the hand. Examining per vaginam, I could just reach the head. The child was turned and extracted, as before, after perforation through the foramen magnum. The placenta followed without any difficulty.

Wishing to verify our diagnosis, I again passed my hand into the vagina, and found a rupture in the side of the uterus, which extended completely through the neck. Through this rupture I passed my hand to the umbilicus, where it could be distinctly felt by Dr. Warren. I could feel and grasp the intestines. The patient recovered, and her case was published by Dr. W. in this Journal for March 21, 1861.

I did not again see the patient until the latter part of last May, when curiosity led me to look her up, to know if she had been again pregnant. I found her expecting to be confined within a week or two. She requested my attendance, which I promised her, Dr. Warren having joined the Army. I directed her, on the first symptoms of labor, to see that the rectum was evacuated, and to send for me immediately.

June 21st, 1863, I saw her at 2 o'clock, P.M. The os uteri was well dilated, and the pains were just commencing. The membranes were broken. On examination, I found the funis in the vagina, but could not reach any part of the child. Aided by Dr. Blanchard, of Neponset, I etherized the patient and proceeded to turn. On passing my hand I felt, first the funis, secondly the hand, and lastly the head. The arm was lying by the side of the head. I brought

down the feet, but found much difficulty in extracting the hips, and still more in bringing the shoulders. This having, however, been accomplished, I perforated the head through the foramen magnum, and delivered the patient of a child weighing between nine and ten pounds. She recovered without any untoward symptom.

I am unable to give the exact dimensions of this woman's pelvis, but can only say it was so contracted that I am convinced by no possibility could a living child, of the above-named weight, have been born.

This is the second case of rupture of the uterus to which I have been called. The first was fatal.

August 28th, 1863.

AMPUTATION IN GUN-SHOT FRACTURES OF THE THIGH.

[Translated for the Boston Med. and Surg. Jour. from the "Traité de Chirurgie d'Armée," par L. Legouest.

By David W. Cheever, M.D., Boston.

SECOND PAPER.

On the Time of Amputation, whether Immediate, Mediate, or Ulterior. On the general Results of Amputation; and also an Inquiry into the relative Success of Amputations in the English and French Forces in the Crimea.

TRANSLATION.

Not only is it important to determine the indications for amputation, but also the proper moment to operate. Amputations have always been divided into those done immediately, or a very little while, after the injury, and those done at a period more or less remote from the accident. The following table, which we borrow from Jules Roux, serves to explain the expressions made use of by different authors to designate the time when amputations are performed.

Authors.	1*st Period.*	2*d Period.*	3*d Period.*
Faure et Boucher.	Immediate. [ry.	Secondary or late.	
Larrey.	Immediate or prima-	Consecutive.	
Dupuytren.	Primary.	Consecutive.	
Boyer.	On the spot.	Late.*	
S. Cooper.	Immediate.	Consecutive. [dary.	
Velpeau.	Immediate.	Consecutive or secon-	
Vidal (de Cassis).	Immediate.	Secondary.	
Baudens.	Primary. [ate.	Consecutive. [utive.	
Lisfranc.	Primary or immedi-	Secondary or consec-	
Nélaton.	Immediate.	Consecutive.	
Malgaigne.	Immediate.	Secondary.	
Fenwick.	Primary.	Secondary.	
Alcock.	Primary.	Intermediary.	Secondary.
Sédillot. [selin.	Immediate. [ate.	Retarded. [dary.	
Denonvilliers et Gos-	Primary or immedi-	Consecutive or secon-	
Legouest.	Immediate. [ry.	Mediate.	Ulterior.
H. Larrey.	Immediate or prima-	Consecutive.	Late or ulterior.
J. Roux.	Immediate or prim'y.	Mediate or Secondary phases *Phlegmonous, or of Osteo-myelitis.*	Late. Ulterior. Consecutive.

* Tardive.

Some surgeons consider as amputations of the first period only those which succeed, so to speak, the accident, or are performed a very little while after it: others take twenty-four hours for the extreme limit: for us, an amputation is *immediate* when it is performed before the development of the phenomena of inflammation, which may show themselves after a few hours, or only after many days have elapsed. The majority of surgeons class in the second period all amputations which are not immediate. We must establish a distinction between amputations done during the period of acute inflammation, and those which are performed after the inflammation has lost its violence and is entirely quiet. We designate by the name *mediate* those amputations done during the inflammatory stage; and by the name *ulterior* those done after the lesion has become, so to speak, local, and resembles a chronic affection.

Immediate Amputation.—Numerous discussions, as far back as the Royal Academy of Surgery, have changed the exact appreciation of the necessity and the time for amputation after gun-shot wounds. Letting these debates pass, we will say that the absolute necessity for an operation governs the whole question. When amputation is inevitable, it ought to be done immediately, that is to say, as soon as possible, before the appearance of fever. Whatever may be said, we substitute, in fact, a wound less severe, for one more severe, whose complications must be fatal. This rule has no exception but the total removal of the lower extremity, at the hip-joint, as we have formerly shown.

Mediate Amputation.—When inflammatory complications have made their appearance, amputation ought to be postponed as long as possible, until quiet is reëstablished. But often these complications do not diminish; and their violence is sometimes so great that we are obliged to amputate at the height of the inflammation, for fear the wounded man may succumb. The period of mediate amputation may last from a fortnight to a month, and it is above all towards its close that it is best to operate; but here the surgeon often finds himself in a quandary from which it is difficult to escape. Is it better, at this late period, to sacrifice or to preserve the limb? The wounded man, having passed through the earlier dangers, can he not accomplish a complete recovery without amputation? In such a case the decision to be made rests entirely on the diagnosis and prognosis of the affection. Amputate, when the general conditions are bad; that is to say, when the wounded must be transported; when the hospitals are crowded; when epidemics prevail; when very acute inflammation has invaded the bone for a considerable extent, or when the suppuration has dissected up and infiltrated the limb: you will save very few of your operations, it is true, but you will save less wounded if you do not operate. The opportune moment is difficult to seize; if it once escapes us, often it does not return; it is for the sagacity of the surgeon to know

how to seize upon it. Under opposite conditions, do not amputate; allow the period for a mediate operation to pass by, and seek for that of an ulterior amputation.

Ulterior Amputation.—The period for ulterior amputations has, so to speak, an unlimited duration. It commences after the cessation of the symptoms of acute inflammation, that is to say, three weeks or a month after the injury, and lasts for many months, and even years. In its first phase, extensive suppuration, hectic fever, or emaciation, and in the last, the chronic alterations of bone, constitute the indications for operation.

Amputations which are indispensable ought, then, to be done at once; mediate and ulterior amputations should be retarded as long as possible.

Comparative Results of Immediate, Mediate and Ulterior Amputations.—The results of immediate amputation are more favorable than those of mediate amputations; and the results of the latter are less favorable than those of ulterior amputations. These last resemble very much the amputations which Malgaigne called *pathological*, and which he considered as much less dangerous than traumatic amputations; pathological amputations being performed for a chronic affection of the limb, and traumatic amputations for accidental lesions. The observations of our predecessors, on the results of amputation performed at different periods, have been partly confirmed by the experience of our recent wars. In the English Army, the immediate and the mediate operations performed in the Crimea, from April 1st, 1855, to the end of the war, were:—

		Deaths.	Percent. of Deaths.
Immediate operations,	690	175	25.3
Mediate operations,	89	38	42.7

In the hospitals of the Bosphorus, from September 26th to November 27th, 1854:—

	Deaths.	Under Treatment.	Recoveries.	Percentage of Deaths.
Immediate operations, 154	18	40	96	11.6
Mediate operations, 65	42	7	16	64.6

The proportion of deaths after primary amputations is larger in the Crimea than in the hospitals of the Bosphorus, where those operated on were placed at once under good circumstances; on the other hand, it is smaller after mediate operations, because at the period when these were done in the hospitals of the Bosphorus, these crowded establishments presented no longer as favorable conditions as the ambulances of the Crimea. In the French Army, all the amputations, not including those of the phalanges of the hand, the metacarpal bones, or the toes, amounted, during the whole campaign, to 4,467, classed as follows:—

		Deaths.	Recoveries.	Percentage.
Immediate operations,	3,234	2,337	897	72.2
Mediate operations,	852	600	252	70.4
Time not determined,	381	194	187	51.
	4,467	3,131	1,336	

Among these there were 120 double operations, which gave:—

		Deaths.	Recoveries.	Percentage.
Immediate operations,	53	38	15	71.7
Mediate operations,	67	51	16	76.2
	120	89	31	

The primary operations performed in the English army gave, on the one hand, 25.3 per cent. of deaths, and on the other, 11.6 per cent.: and the secondary operations, 42.7 and 64.6 per cent. of deaths: the advantage rests, then, with the primary over the secondary. On the contrary, in the French army, the primary operations gave 72.2 per cent. of deaths, and the secondary ones 70.4 per cent.: there is a slight difference, then, in favor of the latter. But we must consider that the operations whose period is undetermined gave only 51 per cent. of deaths; that it is very probable that they were primary operations, and that by adding them to the primary ones, these present a mortality of only 70 per cent. There would be, then, but an insignificant difference between the primary and secondary operations done in our ranks, in the Army of the East. We shall explain, presently, the increased loss among our operated, compared with those in the English army.

The remarkable statistical researches of Malgaigne, on the capital operations done in the hospitals of Paris, and the more recent ones of M. Trelat, appear to establish beyond doubt the superiority of pathological amputations over traumatic ones.

	Amputations.		Deaths.	Percentage.
Malgaigne.	Pathological,	343	176	51.3
	Traumatic,	166	104	62.7
Trelat.	Pathological,	568	223	39.3
	Traumatic,	470	261	55.6
	Undetermined,	106	28	26.4

General Results of Amputations.—Some surgeons, and among the most eminent Malgaigne and Velpeau, while allowing amputations in cases where they are indispensable, are inclined to perform as few immediate amputations as possible; and think they can lay down as a general law, that attempts to preserve the limb, in every case, do not expose the patient to more chances of death than amputations do.

This dictum cannot be adopted as a general rule in military surgery; the difference in the results which can be attained in the field, or in civil hospitals, is very great, and depends upon causes which we have previously enumerated. We are obliged to confess that the general results of amputation do not give a great sum of successes; but it is also just to acknowledge that the partial comparative statistics of success after amputation or without amputation, including even those which we have brought forward on fractures of the thigh treated by the preservation of the limb, or by amputation, are not yet complete enough to establish a law; and that, thus far, they only approximate the solution of the problem, without settling it definitely.

The general mortality after amputation has been very variable under different circumstances, and according to the returns furnished by different surgeons: Boucher estimates that two thirds of those amputated succumb; Faure assures us that after the battle of Fontenoy (1745), 300 amputations gave only 30 or 40 successful results; Bilguer reduces down to one or two the successful cases of amputation performed during the seven years' war (1756). Larrey, recalling all his recollections, after thirty years of war, thought he had saved three fourths of his amputated. A. Blandin, Surgeon of the Republic, says, that with careful after-treatment we may hope to save three fifths of those operated on. These are estimates without figures and without rule: we shall find in the following table data, which, without being rigorously exact, are yet more certain, by reason of the very considerable numbers on which they are based:

	No. operated on.	Deaths.	Percentage.
Naval battle, Brest (1794),	60	2	3.3
Battle of Newbourg (1794),	106	8	7.5
Naval battle, Aboukir (1798),	30	0	0
Ditto in Frency army,	14	3	21.4
Campaign of New Orleans,	52	12	23.1
Battle of Toulouse,	99	32	32.3
Battle of Waterloo,	372	191	51.4
Naval battle, Navarino,	58	14	24.1
Paris, Gros Caillou (1830),	17	9	53
Paris, Hôtel Dieu (1830),	24	17	70.7
Paris, Roux (1830),	14	7	50
Paris, Saint Louis (1832),	15	11	73.4
Siege of Antwerp (1833),	64	14	21.9
Spain (1836-37),	77	36	46.8
Expedition of Constantine (1837),	23	17	73.9
Paris (1848),	120	56	46.6
Paris (1848),	14	9	64.1
Danish Army (1848-50),	243	96	39 5
Crimean war (English army),	998	273	27.4
{ Crimean war (French army), *Capital operations only.* }	4,466	3,131	70.2
Totals,	6797	3,916	57.63

The 6,797 operations brought together in this table, give a mean of 57.63 deaths per one hundred.

Enormous differences exist between the ratios of mortality, taken singly: it is during the expedition of Constantine that the mortality was the largest, 73.9 per 100. Then come successively, that of St. Louis, in 1832, 73.4 per cent.; Hôtel Dieu, 1830, 70.7 per cent.; French army in the Crimea, 70.2 per cent.; Val de Grace, 1848, 64.1 per cent.; Gros Caillou, 1830, 53 per cent.; Waterloo, 51.4 per cent., and Paris, in 1830, according to Roux, 50 per cent.

The unfortunate circumstances in which the wounded were placed during the disastrous expedition of Constantine, during the long war of the Crimea, after the fatigue of a battle of giants like Waterloo, in the crowded wards of St. Louis and the Hôtel Dieu; and

also the painful moral position of both military and citizen wounded, victims of the street combats of a revolution, appear to us sufficient to explain this great mortality.

The small mortality after operation in certain battles, as Aboukir, English army, 0 per cent.; naval battle of Brest, 3.3 per cent.; Newbourg, 7.5 per cent.; Aboukir, French Army, 21.4 per cent.; Antwerp, 21.9 per cent.; New Orleans, 23.1 per cent.; and Navarino, 24.1 per cent., appear more difficult to understand.

It is rather remarkable that operations performed after naval combats have given, generally, less mortality than others; it may be attributed, perhaps, to the distribution of the wounded among a large number of vessels; to the robust and seasoned constitution of sailors; to the absence of any derangement of their habits; the ship being their habitation, and becoming their hospital after having been the field of battle. We must observe, also, that Newbourg, New Orleans and the Siege of Antwerp, which gave the smallest mortality after operations, were short and successful campaigns, during which the troops had not time to become fatigued, and were surrounded with care and resources innumerable. It is well to know that at the beginning of a campaign, the surgery is generally pretty successful; but, in proportion as the war is prolonged, it must be practised upon men in worse conditions, and can count upon less and less numerous successful cases.

This is the great cause of the sad mortality of our operations in the Crimean campaign, amounting to 70.2 per cent.; and to this cause are to be added the inclemency of the climate, epidemics, and the overcrowding of our hospitals. There is reason to be surprised at the relatively small mortality of those operated on in the English Army, our ally in this campaign; their ratio of 27.4 per cent. is almost the same as the 25 per cent. computed by Larrey after thirty years of war. The superior success of English surgery over French is shown as much in civil as in military practice; it so greatly astonished our surgeons, that certain surgical statistics from beyond the channel, recently published in France, have been warmly attacked, and thought to be vitiated by manifest errors.

For our own part we accept the statistics given in the work entitled, "Medical and Surgical History of the British Army which served in Turkey and the Crimea during the war against Russia, in the years 1854, '55, '56," which was presented to Parliament in 1858. We must remark, nevertheless—1st, That the number of operations, given as 998, and of deaths 273, should really be increased to 1080 operations, and to 310 deaths, after counting up the English statistical tables; whence it results that the mortality was 28.7 per cent. instead of 27.4; 2d, That 737 amputations out of 1080, while not fully recovered, were transferred from the Crimea and Scutari to England, and that they are all designated as recoveries.

The difference of mortality, 1.3 per cent., between 27.4 per cent., the ratio of the original tables, and 28.7 per cent., the ratio of the tables as revised, is not important enough to delay us here. But we cannot omit noticing the uncertainty which prevails about the fate of the 737 amputations transferred to England, and carried out on the tables as recoveries. Has no one of these cases of operation succumbed, from the day of the transportation to 1856, the period at which the surgical history of the English campaign ends, with the war? Have all those amputated entered at Chatham, to the number of 667, survived their wounds? We may reasonably doubt this, when we remember how many of the French operations died during their transportation from the Crimea to Constantinople, and from that city to France, and even later than this; and since we know how many fatal complications may arise during the cicatrization, and before the perfect recovery from an amputation. It is almost certain that the authors of the English statistics have not entered in their column of mortality, prematurely carried out, the losses resulting from secondary or ulterior accidents of amputation, and that they have thus given, without meaning it, an average of deaths below the reality; whilst that in the returns of the French army, the result of operations is not determined until the 31st December, 1857; that is to say, eighteen months after the campaign, and even then that those only who are discharged and pensioned are counted as recoveries; the long period of time embraced by these statistics comprises thus both the immediate and the consecutive results of operations.

These considerations may detract a little from the registered success of the English surgery in the East, but they do not explain the numerous failures in our practice during the same campaign. Observations of a different kind give us more positive results, and those, too, of primary importance. The larger the army, the more numerous the sick and wounded, and the greater also the mortality and the suffering, notwithstanding the best precautions, and the most liberal provision of administrators, and of the medical staff. The effective strength of the English army in the Crimea has never been as great as ours; it has not surpassed 97,864 men, while ours has been 309,000 men. Their effective force was wholly renewed, and not completed before the Spring of 1855; ours has received only successive contingents. The number of the English wounded was only 12,164; while ours was 39,868.

In the discussions in the Academy of Medicine in 1862, to which the surgical statistics of the Civil hospitals of London gave rise, much was said of the hygienic arrangements, the material resources, and the commisariat found in these institutions, and brought forward as being much superior to ours. We do not possess any documents on the subject; but during the Crimean campaign every one saw the English ambulances and hospitals, at first only tolerably organ-

ized, improve rapidly under the efforts of the Commissioners with full powers sent from London to inspect them, and acquire, both in regard to the buildings, the furniture and the clothes for the sick, as well as in their diet-lists, a degree of comfort, which our establishments, much more numerous, could not equal, in spite of the zeal, devotion and efforts of the medical and administrative staffs. It must also be added, that the transportation of our sick from the Crimea periodically crowded our hospitals at Constantinople, and perpetuated there pyæmia and hospital gangrene; while the English transports, necessarily less numerous than ours, were, almost all, at once directed to the mother country; and that the wounded and cases of operation of the English army did not quit the Crimea until they were already in a fair way for recovery, while the French wounded and operated were either sent off at once, or a few days after their wounds, to make room for others, who succeeded them uninterruptedly. If transportation is an excellent measure, it is so only on the condition that it is applied to men really in a fit state to be transported; when the necessities of war oblige us to transport indiscriminately all the wounded and operations of the day or the night, not only in order to avoid crowding, but also to make room for new cases, then transportation can have only unfortunate results. It was not possible for us, in a military point of view, to retain, upon the hostile territory of the Crimea, any considerable number of wounded, who might have become a serious embarrassment to the command, in case of retreat or re-embarkation.

All unprejudiced minds will find in these differences of condition, imposed by events, the reason of the differences in the results obtained. Perhaps, also, in order to embrace all the elements of the question, we must take into consideration the influence which the race, the hygienic habits and the food of those who undergo operations, may have upon the success of them; it is a last resource to explain, in a general way, the results of the English surgery, the success of which seems sometimes to belong to the miraculous.*

Dr. Nelligan, of Dublin, expired on the night of the 23d July, in the forty-eighth year of his age. As a practitioner, he had arrived almost at the head of his profession, and had earned for himself a high reputation by his medical writings, particularly by his popular work on "Medicines, their Uses and Mode of Administration."

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* When the results of the vast statistics of the present war in America come to be consolidated at some future day, we anticipate that they will prove the surgery and the hygiene of our armies to have been no less successful in recoveries from wounds and operations than the English were. This we may fairly infer from the results which have been tabulated thus far. Any who are interested in military surgery will find in the work of Dr. Legouest much that is novel, valuable and instructive in all branches of the service. Those who desire may find a lengthy and elaborate *revue critique* of the book in the *Archives Générales de Médecine*, 5e série, tome xiii., 1859.

Bibliographical Notices.

The Nature, Causes and Treatment of Nervous Deafness. Translated from the French of "DUCHENNE," with additions, by LAURENCE TURNBULL, Aural Surgeon to, and Lecturer on Aural Surgery at, Howard Hospital, Philadelphia, &c. &c. Philadelphia: Lindsay & Blakiston. 1863. 1 vol. 12mo. Pp. 119.

THE above is the title of a small treatise on Nervous Deafness, which has just appeared from the pen of Dr. Laurence Turnbull, of Philadelphia. Nervous deafness is a subject of great obscurity, and we gladly welcome anything which tends to throw any light upon it. We therefore opened the book with great interest, hoping to find in it some original observations upon this important and obscure department of aural surgery. In this respect we were somewhat disappointed, though the book is by no means devoid of interest or value.

Its largest portion consists of a translation from the French of Duchenne; its last thirty-three pages, of additions by the translator. The chief value of the first part consists in the physiological study which it contains, of the chorda tympani nerve, and of certain electro-physiological phenomena, which M. Duchenne observed. These are interesting and valuable, and we think Dr. Turnbull has done good service by giving to them an English dress. We cannot say as much for the electro-therapeutics, which follow the observations. M. Duchenne is an enthusiast in his special study of electricity, which he has done so much to introduce to the medical profession. This enthusiasm sometimes leads him to make extravagant statements of the value of electricity in therapeutics. Such, we think, is the case in the work before us. Whoever reads Dr. Turnbull's translation will be likely to form, from that alone, a very erroneous idea of the power of Faradization in relieving what is called nervous deafness. That it occasionally does good, we do not doubt. But quite a number of experiments, meaning by that expression thirty or forty—and probably more, upon patients of different ages, and of both sexes, and made in the way indicated by M. Duchenne, and perseveringly continued, have not produced, in our hands, the results obtained by him. We are therefore compelled to adopt the language of M. Becquerel, in his late work on the "Applications of Electricity to Therapeutics." He says, in his chapter devoted to the ear, "In conclusion, I believe myself perfectly authorized to say, that electro-magnetic currents are of no real efficacy in the treatment of nervous deafness, when this is essential and not symptomatic." In sympathetic affections of the ear, we have no doubt that an electric current is sometimes of value. Yet we do not wish to discourage experiment in this direction. Enough has been accomplished, as the monograph, whose title stands at the head of this notice, proves, to encourage further effort; but not enough, we think, to warrant the assertion which it contains, that "the preceding facts *superabundantly demonstrate* that the Faradization of the chord of the tympanum and of the motor muscles of the little bones, when applied to the treatment of nervous deafness, produces the happiest results."

Dr. Turnbull's "additions" present a very good account of the existing state of knowledge with regard to nervous deafness, though

they are by no means exhaustive of the subject. We hope he will go on in the way he has begun, and by and by give us a complete treatise on nervous deafness—a subject whose importance is only equalled by its obscurity. E. H. C.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, SEPTEMBER 10, 1863.

PROFESSIONAL FEES.—The subject of professional fees is one of ever-recurring interest and very frequent embarrassment to the medical practitioner. It forms an unfailing topic of mutual discussion in the daily intercourse of physicians, and its difficulties and perplexities are a fruitful source of annoyance and vexation. Notwithstanding all the efforts that have been made to fix a regular standard of charges, every physician must often feel that this cannot represent fairly, in very many cases, the value of his services, and yet it is very difficult to bring the mind of the community to the true point of view. Popularly, the members of the medical profession are looked upon as a class who earn their money easily. To a man who gets his daily bread by the sweat of his brow, it seems a very easy thing to pass judgment upon a case and prescribe treatment, in an interview of a few minutes, and it comes rather hard to him to pay even the minimum fee for such a service. To a sensitive physician, also, it is no pleasant thing to exact the customary compensation in such cases, and the abrupt question, "how much do you charge, doctor?" produces in time a feeling very like meanness and self-reproach. On the other hand, where there are abundant means on the part of the patient, such a man will feel that he does himself injustice, where an important professional service has been rendered, even when he charges what is generally regarded as the proper maximum. For how can a service, where, under Providence, the physician may be said to hold the scales of life or death, be compensated by any sum, however large, which professional usage permits him to demand?

It is greatly to be desired that there should be more uniformity in this matter with the profession at large. Here in Boston we have adopted a sliding scale, after much deliberation, as affording the best chance of securing adequate compensation and adapting the rate of charge to the means of the patient. We are inclined to think, however, that this does not remove the difficulty or do much towards equalizing fees among our professional brethren. We hear young men among them complaining with bitterness of some of the more advanced members of the profession, that they constantly attend patients in good circumstances for less than the maximum fee, thus securing to themselves a wider range of practice and preventing the less prosperous portion of the profession from making what is really a just charge. This allegation is made with peculiar emphasis against some successful practitioners whom we might name, and, if true, it certainly implies a great want of regard for their brother physicians and a great want of self-respect. It should be a point of honor with every physi-

cian to keep these considerations in mind. Men of education and talent cannot and will not devote their energies to the practice of a profession which does not give them adequate remuneration, and it certainly is the interest of the community that the care of the public health should not fall from such hands into those of mere bargainers and competitors for cheap business. The community at large do not, as it seems to us, show that appreciative sense of obligation under which they are placed by the devoted labors of the medical profession. How rarely do we hear of a legacy or a liberal gift from a grateful patient, over and above the amount charged on the bill! There are exceptions to this, we know, but they are not common. Our recent mention of the large fees received by the surgeon of the King of Belgium and the accoucheur of the Empress of Russia, has prompted a friend to remind us of even a larger sum than either of those fees left as a legacy some years since to one of our Boston physicians, who is still in active practice. The circumstances are so peculiar that they are worth relating, although some of the facts are undoubtedly well known to a portion of our readers.

Dr. —— was called to the wife of a neighboring physician, who was in difficult labor. The husband delegated to him the responsible duty of delivering by forceps, which he accordingly did at once, and left the house after a stay of twenty minutes. The mother and child did well; no second visit was necessary. Of course no charge was made to a fellow practitioner, and the circumstances of the case were consigned to the dusty shelves of past professional experience. *Forty years* after, Dr. —— was notified that he had become the heir to a magnificent legacy from the lady whom he had so relieved in her hour of peril. The statement was so incredible that it required strong persuasion to make him believe it. The lady died a widow and childless, having lost her daughter at the age of seven years. The amount of the legacy was 10,000 dollars in personal property, which was paid at the time, and a share of a valuable estate—said share being valued at 10,000 dollars. Circumstances have prevented the estate as yet from being sold or divided. The present value of this property is undoubtedly much greater than it was at the time of the decease of the former owner, as forty thousand dollars have been offered for a portion of it which was at that time valued at twenty-five thousand dollars. So that on the whole our friend is safe in reckoning the amount of his legacy as at least from twenty-five to thirty thousand dollars. Expressed in francs, this throws into the shade Mr. Thompson's 100,000 and Prof. Scanzoni's 30,000. But then it must be remembered that the grateful testatrix was the wife of a physician, and was able to appreciate the value of the services of a faithful member of the profession and the inadequacy of the remuneration in too many instances. Not the least curious circumstance in this history is, that the recipient of this munificent legacy never again saw the lady, from the moment when he delivered her with the forceps forty years before!

Removal of Examiners of Pension Claimants.—We learn that Dr. Graves, of Chelsea, and Dr. Shaw, of Boston, have been summarily removed, and Dr. Sprague as summarily suspended from the duties of the office of examining surgeons of candidates for pensions, on charges preferred by an unknown person, and without an opportunity of refu-

tation or explanation on their part. No one acquainted with these gentlemen can believe for a moment that there can be the least just ground for such a high-handed proceeding. This has been done just at the time when the biennial examination was to take place, throwing the whole business of this examination upon a single surviving examiner, greatly to the inconvenience of the unfortunate claimants, who often come from great distances and are subjected to needless expense and delay by this state of things. Who is at the bottom of this? The profession have a right to know who it is that has thus ventured to trifle with the professional reputation of these gentlemen.

Sarracenia Purpurea in the Treatment of Variola.—Dr. A. N. McDowell, Acting Ass't Surgeon in the United States General Hospital at Trenton, Mo., reports the results of his treatment of 43 cases of smallpox in that hospital. The general treatment was by the use of stimulants, lager beer being allowed *ad libitum*; the diet, eggs and milk. The purely medical treatment was in the use of the sarracenia purpurea, or pitcher plant. An ounce and a half of the leaves to a quart of boiling water was boiled down to a pint and a half, and a wineglassful given every six hours. It was administered in 36 of the 43 cases. One case is reported. On the appearance of the eruption, the remedy was given. The eruption, instead of proceeding to suppuration as usual, began to dry up; the swelling of the parts diminished, the secondary fever was slight, and *all* the symptoms were mitigated. In a short time, instead of scabbing, the scales fell off like bran. The usual pitting was also prevented by this treatment, the scales as they came off leaving the face smooth. But four deaths occurred. Dr. McD. concludes his report in the *American Medical Times* by stating that "the conclusion is inevitable that sarracenia is a most useful medicine in variola."

Use of Ether in Surgical Operations.—Dr. T. D. Lente, Surgeon to the West Point Foundry, publishes in the *American Medical Times* a tabular statement of thirty-three surgical operations performed by him with the use of sulphuric ether as an anæsthetic. These cases are furnished to show the fallacy of the objection urged against the use of ether by the advocates of chloroform on account of the *length of time* and the *large quantity* requisite when the former is used. Some of these operations were among the gravest in surgery, such as the amputation of the thigh and arm, and the removal of large tumors; a number of teeth were extracted—from six to fourteen having been removed during the etherization; the time required, however, in no case exceeded 6½ minutes, ranging from that time to 1½ minute. The quantity varied from 1½ drachm to 16 drachms. The inhaler used by Dr. L. is made of coarse and stiff towels, folded in the shape of a cone, and a handkerchief or soft cloth, on which the ether is poured, is thrust into the apex of the cone.

Action of Quinine in Phthisis.—We find the following on the action of quinine in phthisis, in the London *Medical Times and Gazette*, to which it was communicated by Dr. Richard Payne Cotton, Physician to the Hospital for Consumption at Brompton.

"With the view of testing, so far as practicable, the general thera-

peutical value of quinine in the treatment of consumption, I prescribed it for twenty-five patients in various stages of that disease; avoiding, as in all my previous experiments, any selection of cases, and excluding only those unfitted by the existence of acute symptoms or special complications. The dose consisted, according to circumstances, of one or two grains two or three times a day, and was continued for periods varying from three to ten weeks. Notes were regularly taken by Dr. Harington, resident clinical assistant.

"Ten of the patients were in the first, six in the second, and nine in the third stage of phthisis. Sixteen were males, and nine females. Their ages varied from twenty to fifty years.

"During the administration of the quinine seven improved *greatly*, five improved *slightly*, and thirteen either did not improve at all or became worse. Of the twelve improved cases, seven were in the first stage, two in the second, and three in the third stage; and, of the thirteen cases in which the quinine seemed to be inoperative, three were in the first stage, and ten were the subjects of more or less advanced tubercular softening. Thus it would appear that whatever good may have resulted from the quinine, it was the most decided in the early stage of the disease.

"In fourteen of the cases cod-liver oil was taken during at least a portion of the time. There was an increase of weight in ten out of the twenty-five patients; such increase occurring in five who had taken the oil, and in five who had not taken it, but being most marked in the former.

"In four cases the quinine appeared to disagree, producing dyspepsia and loss of appetite. In six instances patients who had made little, if any, progress under the quinine by itself, were more or less benefited when steel was added to it. Two of these cases were remarkably good illustrations of the combined influence of quinine and iron; one was in an early and the other in an advanced condition of the disease, but both left the Hospital with every local and general symptom in abeyance, and their health fairly good, after taking for several weeks two grains of quinine twice a day, and a tablespoonful of steel wine immediately after dinner.

"From these facts, compared with previous observations on other remedies, the following are the conclusions at which I have arrived:—

"1. That although quinine may be well adapted to certain cases in which there is an evident cachexia, it is greatly inferior, as a general remedy in phthisis, to some other tonics, whilst in a few instances it is unsuited to the disease.

"2. That the combination of quinine and iron is sometimes very beneficial."

Ozone as a Disinfectant.—Dr. Delabrousse recommends the manufacture of ozone in the wards of hospitals, for the purpose of their disinfection. What we want is, he says, a proper supply of ozone—that is, of a body which is capable of decomposing, and so of neutralizing, the miasms constantly arising in hospital wards, and which at the same time is not hurtful to the patients. And thus, he tells us, the problem is solved. Ozone is such a body, and may be thus used. A spiral platinum wire is placed beneath an inverted funnel, and is rendered incandescent by means of Bunsen's pile. Hereupon the charac-

teristic smell of ozone is perceived in the heated air circulating above the funnel; and its presence is shown by the test paper. Thus may we obtain a ready and practical supply of ozone, and so insure the disinfecting of our hospital wards.—*Med. News*, from *British Med. Jour.*

Acclimatization of Animals and Vegetables.—A Society has been established in England, the object of which is the acclimatization, in the United Kingdom, of animals, birds, fishes and vegetables. By the introduction and domestication of new animals and vegetables capable of affording nourishment, and the perfecting and hybridization of tribes already domesticated there, it hopes to give to the people of England a more widely varied and more trustworthy store of aliments than either rich or poor have ever yet enjoyed. By the third report of this Society, just published, it appears that its success thus far has been very satisfactory.

Lectures on the Microscope.—We would call the attention of our readers to the advertisement in this week's Journal of Dr. Holmes's lectures on the Microscope. This is the first of the new University courses of lectures in the Medical Department, and cannot fail, from the well-known familiarity of the lecturer with his subject, and the charm which attaches to all his public discourses, to attract a large audience.

The Fourth Decennial Revision of the Pharmacopœia of the United States has just been issued from the press of J. B. Lippincott & Co., Philadelphia. It is published under the authority of the "National Convention for revising the Pharmacopœia," held at Washington in the year 1860, and is offered at an extremely low price, in order to insure its general use by physicians and apothecaries throughout the country.

VITAL STATISTICS OF BOSTON.

For the Week ending Saturday, September 5th, 1863.

DEATHS.

	Males.	*Females.*	*Total.*
Deaths during the week	51	67	118
Ave. mortality of corresponding weeks for ten years, 1853—1863,	51.6	53.1	104.7
Average corrected to increased population	00	00	114.72
Death of persons above 90	0	1	1

Mortality from Prevailing Diseases.

Phthisis.	Croup.	Scar. Fev.	Pneumon.	Variola.	Dysentery.	Typ. Fever.	Chol. Infan.
25	1	1	2	0	5	3	21

Deaths in Boston for the week ending Saturday noon, Sept. 5th, 118. Males, 51—Females, 67.—Disease of the bladder, 1—inflammation of the bowels, 2—congestion of the brain, 2—disease of the brain, 1—bronchitis, 3—cholera infantum, 21—colic (painter's), 1—consumption, 25—convulsions, 4—croup, 1—cyanosis, 3—debility, 2—diarrhœa, 9—diphtheria, 1—dropsy, 3—dropsy of the brain, 4—drowned, 1—dysentery, 5—epilepsy, 1—bilious fever, 1—scarlet fever, 1—typhoid fever, 3—gangrene, 2—disease of the heart, 3—infantile disease, 1—disease of the kidneys, 1—disease of the liver, 1—congestion of the lungs, 1—inflammation of the lungs, 2—marasmus, 3—measles, 1—old age, 2—paralysis, 2—premature birth, 1—syphilis, 1—unknown, 5.

Under 5 years of age, 62—between 5 and 20 years, 9—between 20 and 40 years, 23—between 40 and 60 years, 16—above 60 years, 8. Born in the United States, 89—Ireland, 22—other places, 7.